Einhorn. (Max)

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(Reprint from Medical Record.)

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A CASE OF DYSPHAGIA WITH DILATATION OF THE ŒSOPHAGUS.[1]

By MAX EINHORN, M.D.,
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I TAKE the liberty of presenting a case of dysphagia combined with dilatation of the œsophagus. Œsophageal dilatations may be divided into two groups:

1. Those in which the dilatation originates from a stenosis, whether this stenosis be caused by a carcinomatous infiltration, a cicatricial stricture, or a tumor growing on the inner wall of the œsophagus and occluding its lumen, or by any external tumors pressing on the œsophagus.

2. Those in which no material stenosis of the œsophagus can be found

This latter group includes the cases very seldom met with. There are only seventeen cases mentioned in the literature,[2] nearly all of which were recognized and described only at the autopsy. Until lately they have generally been considered as cases of primary dilatation of the œsophagus.

In the beginning of this year Meltzer,[3] for the first time, published a case of dysphagia with dilatation of the œsophagus during the life of the patient. There was no anatomical stenosis present. The cause of the dysphagia in his patient was attributed by Meltzer to the existence of a spastic contraction of the cardia, which, in his opinion, resulted in dilatation of the œsophagus. Meltzer doubts the existence of a primary dilatation of the œsophagus, and thinks most of the cases described must have been due to some other cause, as for instance, spastic contraction of the cardia.

My case, likewise, may be classed in the group of dilatation of the œsophagus, without any anatomical stenosis. Hitherto it would have been classified as primary dilatation of the œsophagus; but, like Meltzer, I am inclined to look upon the dilatation in my case only as a consequence of some other primary disturbance.

Before entering deeper into the subject I will present a full history of the patient.

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[1] Read before the meeting of German Physicians of New York, on November 23d, 1888.

[2] Ziemssen: Handbuch, vii., i., p. 49.

[3] Berlin. klin. Wochenschr., No. viii., 1888.

J. W——, forty-five years of age, janitor, had typhoid fever twenty-five years ago, since which time he has enjoyed perfect health. In the beginning of March, this year, the patient fell down in the street, striking his back against a small projection. He arose unaided, and resumed his work without any annoyance. On the following day he had a pain in the upper part of the body, especially in his arms; this lasted but a few days and disappeared.

About fourteen days later the patient began to have a feeling of fulness after eating, and had a pressing sensation above the regio gastrica. Two or three weeks later he noticed some difficulty in taking his food, and tried to assist it by drinking warm water several times during the meal; only in this way did he succeed in enjoying a whole meal.

In May, on account of this pressing sensation, the patient was compelled to leave the table in the middle of a meal and walk up and down the room, making deep inspirations and expirations; he used to press with his hands upon the front of the lower part of his thorax after having made a deep inspiration and closed the glottis. The patient said that these attacks during a meal resembled very much a suffocating condition. The described manipulation usually brought him relief, allowing him to eat again, but then the process repeated itself. In the morning he could eat more easily than at noon-time.

Since June last the patient has been sleeping very badly (at most three hours during the night). When in bed he had often a sensation as if something would go up and down in the interior of his chest, and when this sensation came on he was forced to cough quite often. From time to time it happened that he awoke, his mouth being full of fluid; also while awake some fluid at times came up into his throat and mouth, this only happening when in the recumbent position. When standing, he was never compelled to empty his throat.

The patient became thin, felt weak and miserable, and soon could partake only of fluid. The sight of solid food enraged him to such a degree that he threw it away with disgust. Even fluid substances were taken only with great difficulty; he used to throw his arms backward, and, standing straight, his head leaning towards the back, after a deep inspiration and with closed glottis he pressed firmly. The condition of the patient became worse and worse; he lost forty-one pounds during these few months, and went for aid to the German Dispensary on October 23d, 1888. *Status præsens*, October 23d, 1888: Patient tall in stature and lean; looks pale. The integument can be lifted in large folds. The physical examination of the thorax and the abdomen cannot detect anything abnormal. The heart-sounds are normal. Pulse, 70; respiration, 20; temperature, judging from sensation upon the chest, not increased. The patellar reflex is present, and the patient is able to stand with eyes closed. The urine does not contain any sugar or albumen. The patient complains of not being able

to eat any solid food, and of difficulty in taking even fluids, as he cannot get them down. Besides this, he has nearly always a pressing sensation around the chest, coughs very much, and is not able to sleep well.

Examination of the stomach and the œsophagus.—1. October 25th, 1888, at 8 A.M. Patient drank coffee one hour before. As soon as a part of the stomach-tube was pushed into the œsophagus a coffee-brown liquid was ejected, in which there were some remnants of food and many epithelial cells present. Thereupon the patient drank 100 c.c. water. At the processus ensiformis I did not hear any swallowing sound during the time that the patient drank. On introducing a part of the tube into the œsophagus, water of a neutral reaction came out. Thereupon the tube was pushed farther into the stomach, without any resistance, and the patient ejected from his stomach through the tube about 70 c.c. of a coffee-brown liquid. Reaction acid, hydrochloric acid present (phloroglucin-vanillin test), the degree of acidity being 40 (*i.e.*, 40 c.c. of $\frac{1}{10}$ normal sodium-hydrate solution neutralized 100 c.c. of the examined fluid).

2. November 5th, at 9 A.M. On account of loss of appetite, the patient had not eaten anything since 2 P.M. of the previous day. The tube was introduced for a length of 46 ctm. from the teeth; a pulpy mass (150 c.c.) came out, in which were present small particles of bread; reaction acid, lactic acid, no hydrochloric acid; acidity =4. The patient drank 100 c.c. water, the tube was introduced 45 ctm., the water came out somewhat turbid by the admixture of mucus and food-remnants; microscopically there were many epithelial cells and micrococci. After the water had come out, the tube was pushed, without being taken out, farther and with but a slight resistance it passed into the stomach; the patient was told to empty his stomach, but only a few drops of a clear fluid was obtained. This proved that the stomach was empty.

3. November 8th. The patient partook of breakfast, and then drank water; he was examined an hour later. The tube was introduced for a distance of 36 ctm., when there appeared a fluid containing no hydrochloric acid; thereupon the tube was pushed, without any furthur resistance, into the stomach, and by expression a fine chyme was obtained containing hydrochloric acid and peptone.

4. November 13th. The patient took eggs, coffee, and a little softened white bread; then he administered his method of bringing the food down into the stomach by means of pressing (bringing the muscles of expiration into play, after having made a deep inspiration, with closed glottis). An hour later, shortly before the exmination, the patient was told to press several times again. The tube was introduced to a distance of 48 ctm., and during expiration only 8 c.c. of a turbid fluid were obtained; there were present very minute pieces of bread and many epithelial cells, but no hydrochloric acid; thereupon the tube was pushed, without any

resistance, into the stomach; now there came out a chymous fluid with hydrochloric acid. The patient drank 200 c.c. water; the tube was introduced about 40 ctm., and the water came out with a gush.

5. November 16th. Patient took breakfast at home and administered his method of forcing down his food. The œsophagus was examined an hour later, and found empty. The pharynx vault was tickled with the finger to induce vomiting, but without success. Thereupon the tube was introduced into the stomach, and a fine chymous fluid, containing hydrochloric acid, was obtained. The stomach was then filled with air by means of a tube and bulb; the air did not emerge, striking the outside wall of the tube. By keeping the tube open the stomach was emptied of the air; afterward the lower part of the œsophagus was blown up. A considerable quantity of air could be blown into it without returning, but upon increasing it still more the air began to escape upward through the upper part of the œsophagus, striking the outside of the tube-wall. During the inflation of the œsophagus there was observed, at both sides of the vetebræ below the inferior margin of the scapulæ, a somewhat more tympanitic resonance, but that was not very decided.

It is evident, from the history of this patient, that the difficulty in bringing the food into the stomach slowly developed a few days after the fall, and finally led to a complete dysphagia. The examinations showed that the contents of the stomach were normal. The examinations with the stomach-tube (a thick Nélaton was used for this purpose) show, firstly, that the passage through the œsophagus to the stomach is perfectly free, for the thick tube passed into the stomach without any resistance; secondly, that the œsophagus, in its lower third, must be saccularly dilated, as the distance from the teeth to the cardia (measured with the tube) is 48 ctm., whereas, in the case of this patient, even taking into consideration his large frame, it ought normally to be not more than 40–41 ctm. In this cavity the tube, leaning on the wall of the œsophagus, was compelled to assume with its lower end the form of a semicircle, and thus produced this high figure. That the patient is really unable, in swallowing, to bring even liquids down to his stomach, except by the pressing action, is proven by the fact that swallowed water could always be taken out from the œsophagus by means of the tube, whereas immediately afterward the tube, pushed into the stomach, brought up parts of the stomach contents containing hydrochloric acid.

The best way to perform this experiment is with two differently colored fluids, and I take the liberty of demonstrating to you, gentlemen, the experiment, which I have so often done at my residence.

The patient, about an hour before, took a cup of coffee and some softened crackers; thereafter he administered his pressing actions. Now I insert the tube into the œsophagus of the patient as far

as the cardia,, in order to see whether the œsophagus is empty ; as you see, a coffee-brown liquid (about 40 c.c.) comes out, in which there are small particles of bread. Congo-paper retains its red color in this liquid. The œsophagus consequently was not empty. Now, after having emptied the œsophagus by means of the tube, I will ask the patient to drink a glass of water (250 c.c). Should the water, by simply swallowing it, not arrive at the stomach, I shall be able to obtain the same from the œsophagus by means of the tube. I therefore introduce the tube again, and you see how the water comes back unchanged; a few flocculi are floating in it, some bread, and epithelia; but otherwise the water returned unchanged and in the same quantity; congo-paper does not change its color in same. Now I push the tube farther through the cardia into the stomach, and have the patient press a little. You see now a coffee-brown liquid coming out, with very small pieces of bread; the congo-paper turns dark blue. This is the coffee which the patient drank at home, and brought into his stomach by his spontaneous pressing action.

The water—which the patient drank just a little while before, and which was obtained without any discoloration from coffee—clearly proves that it has not been in contact with the coffee contained in the stomach; it remained above the stomach in the œsophagus. This proves, therefore, that by swallowing this patient does not accomplish the passage of anything into the stomach, but that all accumulates in the œsophagus and remains above the cardia.

As the œsophagus can hold quite a considerable quantity of liquid in its interior part, it must be dilated. In order to ascertain approximately to what distance the dilatation of the œsophagus extends, I tried to determine at what length of the introduced tube the water of the quite filled œsophagus began to come out, when the patient made an expiratory effort; the lowest figure I obtained was 36 ctm. When there was only a small amount of fluid above the cardia, the tube had to be introduced 46–48 ctm. in order to allow the fluid to come out. Thus the utmost dilatation must be situated at the lowest part of the œsophagus. Further, I tried to fill the inferior part of the œsophagus with air, and examined the back of the patient in order to find out whether the resonance had undergone any change; but the variations were so slight and so doubtful that I would not take them into consideration.

Following Meltzer, I investigated the fact whether in my patient was preserved the faculty of vomiting. By tickling the posterior wall of the pharynx with the finger I could not bring on vomiting. When the stomach had been filled with air, the latter did not return by striking the outside wall of the tube. Both these circumstances would prove, according to Meltzer, that the path from the stomach to the œsophagus is occluded.

I conclude, therefore, from a consideration of the above-ascer-

tained facts, that we have to deal with a case of dilatation of the œsophagus unaccompanied by any anatomical stenosis. Formerly this case would have been considered as a primary dilatation of the œsophagus. But, as it is very difficult to assume a primary dilatation of the œsophagus, Silvius Stern [1] attributed, as a cause of the so-called primary dilatations, either a previous œsophagitis or a paralysis of the œsophagus. Likewise, Meltzer [2] was in doubt as to the existence of a primary dilatation of the œsophagus, and deduced that in this case the spastic contraction of the cardia was the cause of the dilatation. I, like Meltzer, would not consider my case as a primary dilatation of the œsophagus, but am inclined to look for the cause of dilatation in another previous disturbance.

There are three possible explanations of this difficuly in bringing down the food from the œsophagus into the stomach without any anatomical stenosis being present:

1. Paralysis of the œsophagus; the swallowed particles would remain above the cardia, which is normally easily closed, as the œsophagus is lacking in its contractile power.

2. Spastic contraction of the cardia, which, Meltzer suggests in his case, the contractions of the œsophagus cannot open.

3. A lack in the reflex relaxation or opening of the cardia during the act of swallowing. It was shown by Meltzer [3] that every act of swallowing easily opens the cardia by reflex action. Supposing that the centre or the circuit of this reflex action is in any way disturbed, so that the cardia does not relax when swallowing, there will neccessarily result a slight difficulty in transferring the food from the œsophagus into the stomach.

Should you ask which of these three disturbances exists in my case, I should have to confess that it is very difficult to decide with certainty, but the third disturbance is here most probable.

In my patient the dysphagia, as can be seen in the history, was developed slowly after a fall. During the first two weeks the patient experienced no difficulty whatever when eating, but later on he observed that he had to drink warm water in order to effect the passage of the food. After a while the warm water had no effect, and the patient instinctively began to exercise the pressing motions which helped him.

Now, had the œsophagus (by some trauma or contusion) become paralyzed after the fall, or had the cardia spastically contracted —a dysphagia would, naturally, have appeared immediately after the fall; for the paralyzed œsophagus could not bring the food into the stomach; nor could the spastically contracted cardia give free passage to the food into the stomach.

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[1] Silvius Stern: Archiv der Heilkunde, Bd. xii., p. 434.

[2] Berl. klin. Wochenschr., No. xvii., 1888.

[3] Kronecker und Meltzer: Verhandlung d. Physiolog. Gesellschaft, Du Bois Reymond's Arch. f. Physiolog., 1880.

But it would be quite different with the third class of disturbance, viz., lack of the reflex relaxation of the cardia when swallowing. This disturbance, being the slightest, would hardly appear at first; the contractions of the œsophagus would succeed in opening the cardia, and enable the passage of the food forward. Notwithstanding the œsophagus would have more work to do than necessary for the normal relaxation of the cardia when swallowing. With the lapse of time the œsophagus would tire, and some food-remnants, would remain above the cardia. But these remnants, meanwhile, would dilate the inferior part of the œsophagus; the dilated œsophagus naturally would contract with difficulty. In this way there would gradually—after a certain degree of dilatation had taken place—appear that difficult dysphagial condition where, upon swallowing, nothing enters the stomach by the natural way.

Only once did I feel a slight resistance at the cardia on introducing the tube into the stomach; usually I found no resistance whatever. This would speak against the spastic contracture and favorably for our conjecture.

I could not make the patient vomit, nor did the air—blown into the stomach through the tube—return, striking the outside wall of the tube. According to Meltzer both these facts would speak in favor of a spastic contracture of the cardia. The question arises, Are these two signs indeed conclusive? The failure of the faculty of vomiting in the beginning of the illness would tend to prove that the cardia is contracted, and that the stomach, therefore, is not able to open the occlusion. But in an advanced state of the disease, when there already exists a large dilatation of the œsophagus and the latter either does not contract at all or contracts without effect—we could very well imagine that, as soon as the stomach, at the beginning of the act of vomiting, throws up a part of its contents through the cardia into the œsophagus, these contents are not ejected, because the œsophagus does not contract itself; and, besides, the ejected matters, if they did not immediately return through the opened cardia into the stomach, would find room enough to stay in the dilated œsophagus. Thus may be explained the absence of the faculty of vomiting, though the cardia be not spastically contracted.

With regard to the second point, viz., that the air did not strike the tube—we sometimes find, even in healthy people, when the stomach is filled with air to a certain degree of tension, that the air passes rather through the pylorus than through the cardia, so that the air does not strike the tube.

Though we must more or less resort to hypothesis as to the original disturbance of the patient, notwithstanding this the anatomical and clinical conditions are apparent. There is a dilatation of the inferior part of the œsophagus without any material stenosis (for any anatomical stenosis could not be overlooked with a thick tube), and all swallowed matters remains at first in the infe-

rior part of the œsophagus above the cardia. By spontaneously diminishing the size of the thorax after a deep inspiration with closed glottis (pressing), the patient is able to drive the gathered food-substances—by means of the pressure he exerts on the filled œsophagus—into the stomach.

To Meltzer[1] belongs the credit of having described particularly in his article these conditions of bringing down the food spontaneously.

In order to prove that the food remains above the cardia, Strümpell [2] and Meltzer examined the vomited (from the œsophagus) matters, and always found a neutral [3] reaction, whereas the contents of the tube pushed into the stomach had an acid reaction.

This condition is better shown by the coffee-and-water experiment, as I have fully described it above.

In reference to the therapeutics in such cases, it would always be best to feed the patients for a long time only by means of the tube. It would be possible, perhaps, to partly diminish the dilatation of the œsophagus. My patient would not be fed in this way, and I had to content myself with the following treatment:

1. The patient is allowed to take only fluid or semi-fluid things.
2. After every meal the patient must perform his pressing action for a long time.
3. Every evening, before going to bed, the œsophagus is emptied and washed by means of the tube (the patient is not able to do it all alone).
4. The patient introduces the tube into his stomach once every day, in order to relax the cardia.

In the ten days during which the patient has lived according to these rules, he has gained one pound in weight, slept well, never coughed, and has been able to eat more and much easier. He now looks much better, is more encouraged, and contented.

122 East Fifty-ninth Street.

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[1] Meltzer: Berl klin. Wochenschr., l. c

[2] Strümpell: Deutsch Arch. f. klin. Med., Bd. xxix., p. 211.

[3] The food-matters above the cardia not having been in the stomach can have also an acid reaction by organic acid, as can be seen from the above-described tests, but they *never* do contain hydrochloric acid.